USER MANUAL

350545 Rev. F

MP–129 Series Water-Saver

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350545 Rev. F

GETINGE

MP–129 SERIES

WATER-SAVER

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USER MANUAL 350545

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DESCRIPTION OF SYMBOLS & NOTES IN MANUAL

The following symbols with related notes appear in this manual.

"Danger" notes alert the user to the possibility of serious injury or death.

"Warning" notes alert the user to the possibility of personal injury.

"Caution" notes alert the user to the possibility of damage to the equipment.

"Notes" alert the user to pertinent facts and conditions.

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Section 1 Introduction

GENERAL DESCRIPTION

The water-saver is an add-on system that incorporates a water ejector with a pump and a water reservoir to recirculate the water that creates the vacuum necessary for part of the sterilization cycle. The water-saver can typically save 70% of the total water used during a cycle.

Compatible sterilizer models are listed in Table 1–1.

Table 1–1. Water-Saver Models

Water-Saver Model	Sterilizer Model
MP-129A MP-129B MP-129C MP-129D	M/C 3500 and 100 Series (see Note) M/C 3600 and 200 Series M/C 4233 (42") M/C 4233 (76")
MP-129F	400/500, 700 and 800 Series

NOTES▶

- *In this manual, "MP-129 Water-Saver" refers to MP-129A, B, C, and D.*
- *The MP-129A can be installed on the 400/500 Series sterilizers, but the MP129F is preferred because it does not require a pressure switch.*

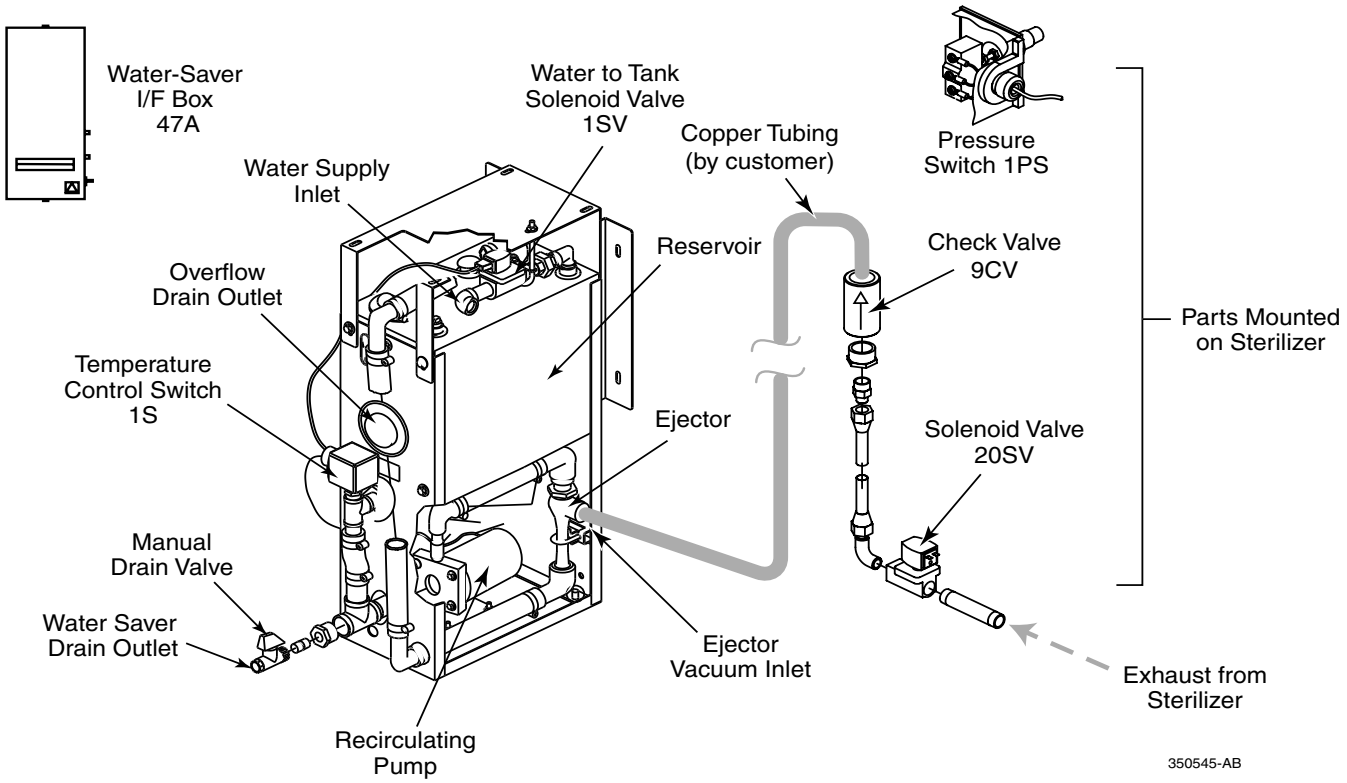
MP-129 Water-Saver

The operation of the MP-129 Water-Saver (see Figure 1–1) is controlled by an electromechanical pressure switch (1PS) that monitors the pressure in the sterilizer chamber. *See Theory of Operation — "MP-129 Water-Saver" on page 1–5 for a detailed description.*

NOTE

Water-Saver I/F Box 47A can be mounted at any convenient location near the water-saver.

Figure 1–1. MP-129 WATER-SAVER PACKAGE



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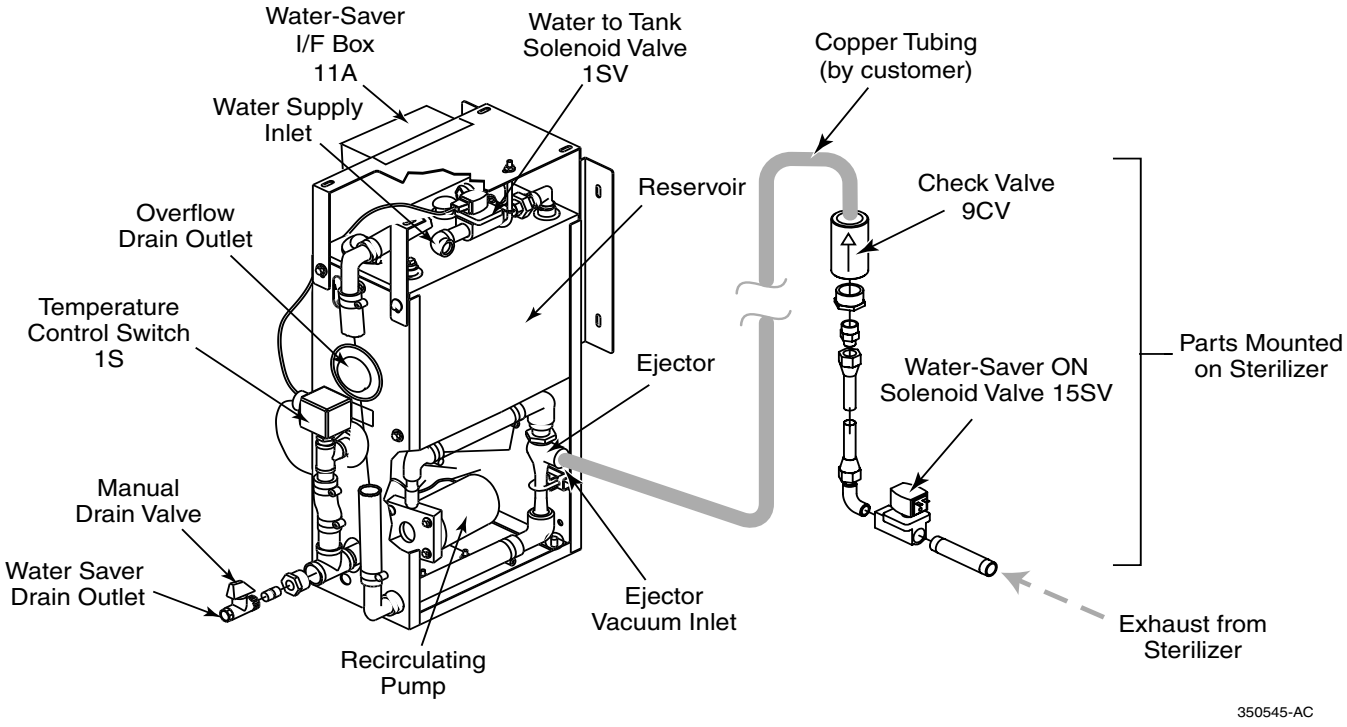
MP-129F Water-Saver

The operation of the MP-129F Water-Saver (see Figure 1–2) is controlled by the sterilizer software. *See Theory of Operation — "MP-129F Water-Saver" on page 1–6 for a detailed description.*

NOTE

Water-Saver I/F Box 11A is mounted on the water-saver unit. Water to Ejector solenoid valve 6SV and Water-Saver ON solenoid valve 15SV are connected directly to sterilizer Control Box 2A.

Figure 1–2. MP-129F WATER-SAVER PACKAGE



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TECHNICAL DATA

NOTE ▶

The water-saver should not be used with a sterilizer with Sealing Flange—for example, those installed in an area that may process Bio Hazard material or Bio-contaminated waste. If installed in a sterilizer of this type, the water-saver could become a breeding ground for bioburden, which would then be constantly recirculated through the system. Additionally, decontaminating the components would be difficult at best.

The dimensions and weight, utilities requirements, and electrical supply for the water-saver are listed on installation drawing HS3472, included in the water-saver package.

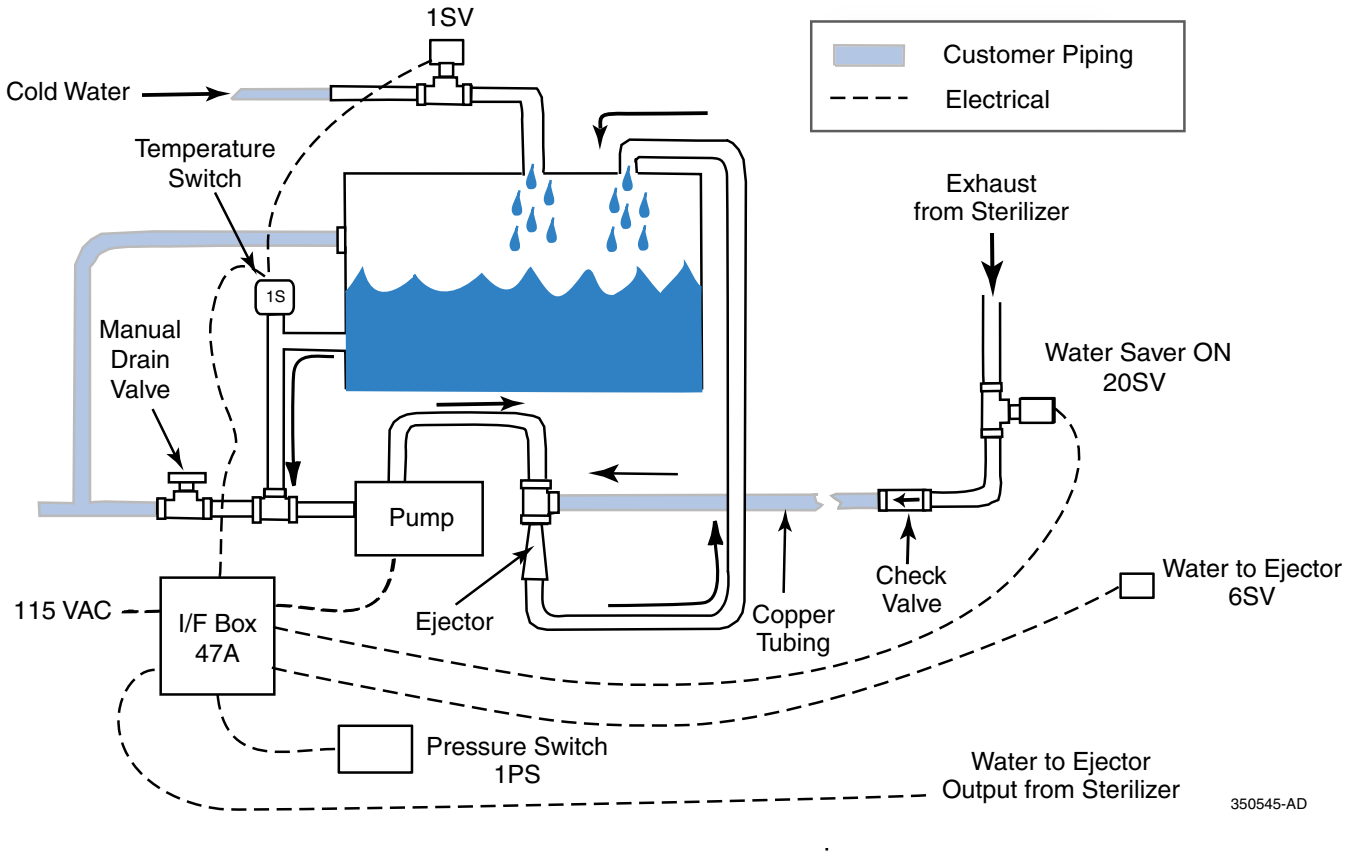
The capacity of the reservoir tank is approximately 6 gallons (22.7 liters).

THEORY OF OPERATION

MP-129 Water-Saver

Water-saver Pressure Switch 1PS determines whether the water-saver or the standard ejector in the sterilizer provides the vacuum. While the pressure in the sterilizer chamber is above 1 PSIG, Pressure Switch 1PS selects the standard ejector. But when the sterilizer chamber pressure drops to 1 PSIG or lower, Pressure Switch 1PS instead turns on the recirculating pump to activate the ejector in the water-saver system.

Figure 1–3. MP-129 WATER-SAVER SYSTEM



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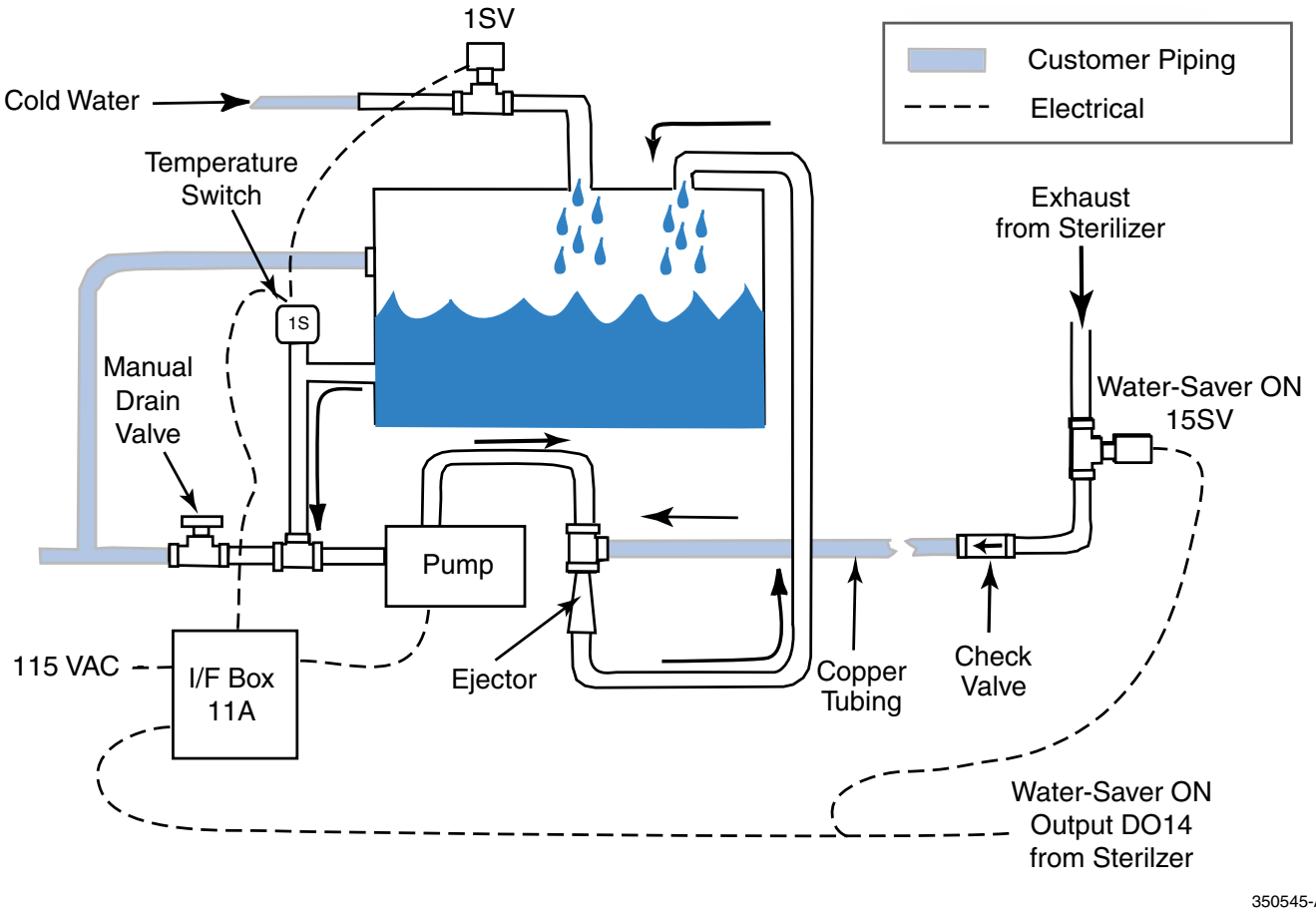
MP-129F Water-Saver

Pressure values are evaluated by the sterilizer software to determine whether the water-saver or the standard ejector in the sterilizer provides the vacuum. The water-saver configuration dipswitch (DS14 on the sterilizer's DISPSWITCHES menu) must be set to 1 in order for the water-saver to operate. While the pressure in the chamber is above -5 psig for vacuum cycles, or above atmospheric pressure for gravity cycles, the sterilizer software selects the standard ejector. When below these values, the software turns on the water saver.

Figure 1–4. MP-129F WATER-SAVER SYSTEM



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All Models

Solenoid valve 6SV, which supplies water to activate the standard ejector, is still active in the sterilizer piping system. However, 6SV is only energized during negative pulses and during the purge above the water-saver pressure setpoint.

The cooler the water used for the ejector, the more efficiently the ejector operates. To keep the water in the reservoir below 120°F (49°C), temperature control switch 1S controls the flow of cold water through solenoid valve 1SV.

When the water temperature rises above 115°F (46°C), temperature control switch 1S signals solenoid valve 1SV to open, allowing cold water to enter the reservoir and cool the stored water. Temperature control valve 1S continually monitors the water temperature within the reservoir. When the reservoir water cools (temperature is below 96°F [36°C]), temperature control switch 1S outputs signals to solenoid valve 1SV and the solenoid valve closes. This maintains the desired water temperature.

Any excess water, such as when cooling water is added to the reservoir, drains through the overflow drain port.

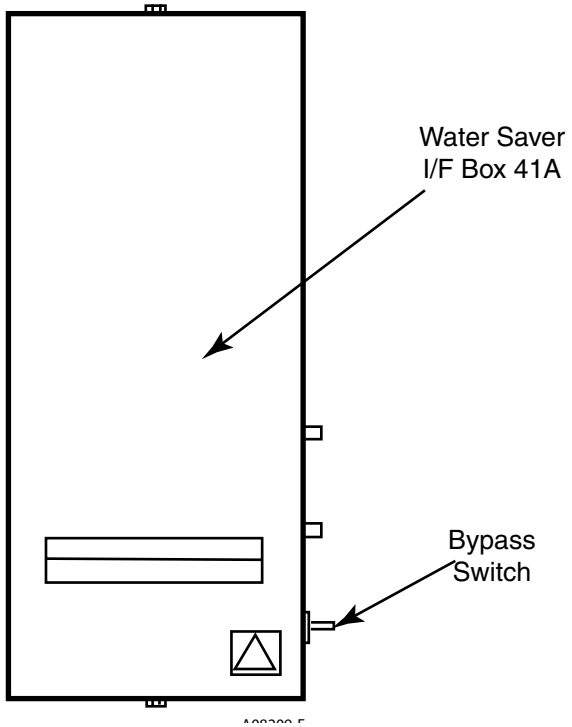
When the pump motor turns on, it draws water from the bottom of the reservoir into the pump. The pump forces the water through the ejector and then recirculates it to the reservoir. This creates the required vacuum.

BYPASS SWITCH

MP-129

The toggle switch on Water-Saver I/F Box 47A permits hospital maintenance or Getinge USA service personnel to switch off the water-saver as a vacuum source and use the sterilizer's standard ejector with external water supply.

Figure 1–5. BYPASS SWITCH (MP-129 Only)



MP-129F

The water-saver can be turned off from the display panel on the sterilizer. The Water Saver configuration switch (DS14) is located on the DIPSWITCHES branch of the SERVICE menu tree. *Refer to the sterilizer Service Manual for instructions on how to navigate the menu tree.*

MANUAL DRAIN VALVE

Located in the feed water line to the pump, this manual valve permits easy draining of the water-saver reservoir when required.

Section 2 MP-129 Installation

Follow the instructions in this user manual when installing an MP-129 Water-Saver to any of the following sterilizers:

- 100 and M/C 3500 Series (MP-129A)
- 200 and M/C 3600 Series (MP-129B)
- M/C 4233 (42") (MP-129C)
- M/C 4233 (76") (MP-129D)

If you are installing a MP-129F Water-Saver to a 400/500, 700 or 800 Series sterilizer, follow the instructions in Section 3.

High-vacuum sterilizers (x33 or xx33 models) benefit most from the use of the water-saver. However, the water-saver can be installed on any Getinge USA sterilizer that uses a water ejector as its vacuum source.

Bills of Materials (BOMs) and drawings necessary for assembling this kit are included with the parts.

- *Use the BOMs as a checklist to verify receipt of all parts.*
- *Use the BOMs and the drawings to assemble the parts per these instructions.*
- *Retain all BOMs and drawings with the unit for future reference*

PACKAGE CONTENTS

MP-129A

Assembly 61301602997 (Rev. C)

MP-129A,3500/100,WATER SAVER

Item	Description	Part Number	Qty
1	MANUAL(U)-WATER SAVER	350545	1
2	CASTLE,WATER SAVER SYS	HS03472	1
3	WATER SAVER PKG,1.25ID,120V	531167	1
4	PIPING PKG,100/MC3500,WTR SVR	61301603246	1
5	SCH,PIPING,SPCL OPTION	P1925	1
6	CONT PKG,WTR SVR,PACS/MC,120V	61301603222	1
7	DIAG,WIRING,WTR SVR,PACS/MC	W1297	1

MP-129B

Assembly 61301602998 (Rev. A)

MP-129B,3600/200,WATER SAVER

Item	Description	Part Number	Qty
1	MANUAL(U)-WATER SAVER	350545	1
2	CASTLE,WATER SAVER SYS	HS03472	1
3	WATER SAVER PKG,1.25ID,120V	531167	1
4	PIPING PKG,233/MC3633,WTR SVR	61301603247	1
5	SCH,PIPING,SPCL OPTION	P1925	1
6	CONT PKG,WTR SVR,PACS/MC,120V	61301603222	1
7	DIAG,WIRING,WTR SVR,PACS/MC	W1297	1

MP-129C

Assembly 531185 (Rev. D)

MP-129C,4200(42),WATER SAVER

Item	Description	Part Number	Qty
1	MANUAL(U)-WATER SAVER	350545	1
2	CASTLE,WATER SAVER SYS	HS03472	1
3	WATER SAVER PKG,1.25ID,120V	531167	1
4	PIPING PKG,MC4233(76"") WTR SVR	531174	1
5	SCH,PIPING,MC4233,W/WTR SAVER	P1781	1
6	CONT PKG,WATER SAVER,120V	531175	1
7	DIAG,WIRING,WATER SAVER,MC----	531181	1

MP-129D

Assembly 531186 (Rev. C)

MP-129D,4200(76),WATER SAVER

Item	Description	Part Number	Qty
1	MANUAL(U)-WATER SAVER	350545	1
2	CASTLE,WATER SAVER SYS	HS03472	1
3	WATER SAVER PKG,1.25ID,120V	531167	1
4	PIPING PKG,MC4233(76"") WTR SVR	531174	1
5	SCH,PIPING,MC4233,W/WTR SAVER	P1781	1
6	CONT PKG,WATER SAVER,120V	531175	1
7	DIAG,WIRING,WATER SAVER,MC----	531181	1

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220V Conversion Packages

100 SERIES

Assembly 61301603000 (Rev. A)

MP129 CONV PKG 100,220V

Item	Description	Part Number	Qty
1	CONTACTOR,18AMPS,24 VAC COIL	61301602111	1
2	RELAY,OVERLOAD,12.0-18.0AMPS	61301602113	1
3	VALVE,SOL,MLD,2WAY,NC,.750,24V	61301601701	1

200 SERIES

Assembly 61301603259 (Rev. B)

MP129 200/220V

Item	Description	Part Number	Qty
1	CONTACTOR,18AMPS,24 VAC COIL	61301602111	1
2	RELAY,OVERLOAD,12.0-18.0AMPS	61301602113	1
3	VALVE,SOL,2WAY,NC,1.00,24V,AFL	61301604082	1

M/C 3500/3600 SERIES

Assembly 61301603260 (Rev. A)

MP129,3500/3600,220V

Item	Description	Part Number	Qty
1	"CONTACTOR,18 AMPS,110VAC"	61301603258	1
2	"RELAY,OVERLOAD,12.0-18.0AMPS"	61301602113	1

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MP-129 INSTALLATION SEQUENCE

WARNING

BURN HAZARD/SHOCK HAZARD: Turn OFF all electricity, water, and steam to the sterilizer before starting the water-saver installation. Touching live electrical connections and/or exposure to live steam could cause serious injury.

Installation of the water-saver consists of:

1. Locating, mounting, and anchoring (page 2-5).
2. Installing the pressure switch (page 2-6).
3. Modifying the sterilizer piping (page 2-6).
4. Connecting the cold water supply (page 2-7).
5. Connecting the overflow drain (page 2-7).
6. Connecting the electrical cables:
   a. MP-129 A & B (page 2-8).
   b. MP-129 C & D (page 2-11).
7. Checking the rotation of the pump motor (page 2-14).

Refer to the engineering drawings listed in Table 2–1 during installation of the MP-129 Water-Saver.

Table 2–1. MP-129 Water-Saver Drawings

Water-Saver	Sterilizer Model	Piping Package	Piping Schematic	Wiring Diagram
MP-129A	100 Series M/C 3500 Series	61301603246	P1925	W1297
MP-129B	200 Series M/C 3600 Series	61301603247		
MP-129C	M/C 4233 (42")	531173	P1781	531181
MP-129D	M/C 4233 (76")	531174		

NOTE

If an MP-129A is installed on a 400/500 Series sterilizer, refer to drawing SK48835 for piping and wiring detail.

LOCATING, MOUNTING, AND ANCHORING

Location

Refer to installation drawing HS3472 (included in water-saver package).

The water-saver can be placed on the floor or mounted to the ceiling in any convenient location adjacent to the sterilizer. A 20-foot length of copper tubing, with connection fittings is supplied for connecting the water-saver to the sterilizer.

Locating the water-saver within the connected reach of the copper tubing limits the positioning to approximately 15 feet from the sterilizer. If the water-saver is to be located on the side of the sterilizer opposite the connection piping, the distance may be somewhat reduced.

When mounting to an overhead structure, positioning the vacuum port of the water ejector on the water-saver 10 feet above the floor is about the maximum height that permits the 20-foot copper tubing to reach the sterilizer.

Mounting and Anchoring

Mounting brackets are provided to secure the unit to a wall or to mount it to the ceiling. Mounting holes in the bottom plate are provided for securing the unit to the floor.

Structures for ceiling-mounted units must be able to support a minimum of 250 lbs. (113 Kg) (150 lbs. [68 Kg] plus water, hardware, and safety margin).

Use 3/8" diameter bolts with appropriate anchoring devices to secure the water-saver.

For seismic anchoring requirements, worst case center of gravity location, and weight, refer to drawing No. 531199 (located in Section 5).

The water-saver can stand stationary of its own weight if anchoring is not required or in areas where accidental tipping is not a possibility.

All mounting hardware other than the mounting brackets provided on the water-saver is the responsibility of the customer installer.

Water-Saver I/F Box

Mount the Water-Saver I/F Box (47A) supplied with the water-saver at any convenient location that allows easy electrical connections to the motor on the water-saver and to the sterilizer control box.

CONNECTING THE PIPING COMPONENTS

Each sterilizer being fitted with the water-saver must be modified by installing pressure switch 1PS, solenoid valve 20SV, check valve 9CV, and the copper tubing to connect into the water-saver.

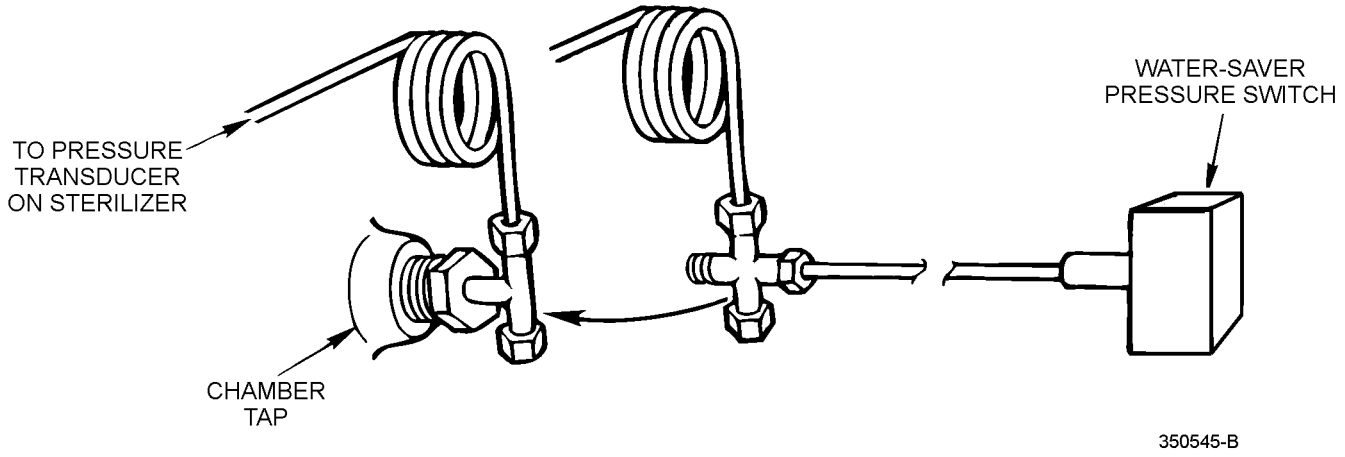
Pressure Switch 1PS

Pressure switch 1PS can be mounted in any convenient location, on or near the sterilizer or water-saver, so that it can be piped into the chamber pressure transducer line and wired to the sterilizer and water-saver.

Connect a ¼" OD copper tubing (supplied by customer) from the pressure switch to the chamber pressure line.

A convenient location is to tap into the ¼" OD coiled copper tubing from the sterilizer pressure transducer.

Figure 2–1. PRESSURE SWITCH CONNECTION



Solenoid Valve 20SV and Check Valve 9CV

Separate packages of fittings and components for the various sterilizer models are listed in Table 2–1 on page 2-4. *Refer to the piping assembly drawing and piping schematic included with the water-saver when installing the piping modification package.*

NOTE ▶

Water to Ejector valve 6SV remains in the sterilizer piping, but its cable is disconnected from the sterilizer control box and connected to the water-saver I/F box.

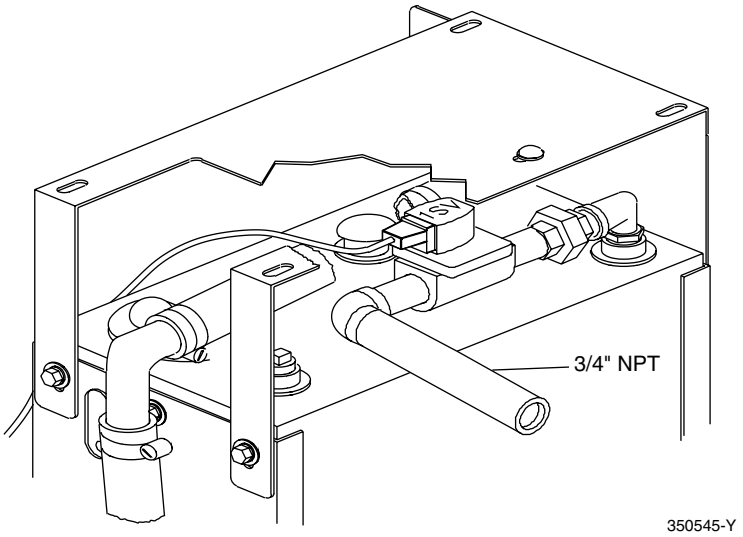
NOTE ▶

Apply pipe thread sealant compound or pipe sealant tape to all pipe fitting threads.

Cold Water Supply

Connect the 3/4” NPT water supply piping to the water supply elbow on the top of the reservoir (labeled CWI on installation drawing HS3472).

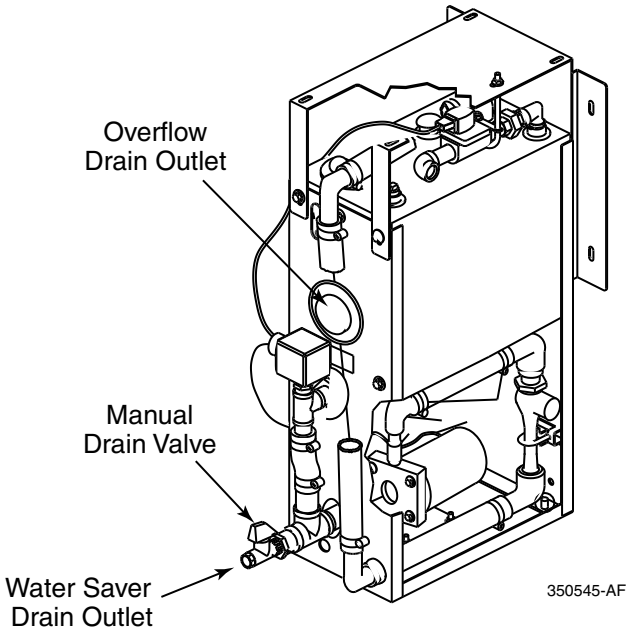
Figure 2–2. COLD WATER CONNECTION



Overflow Drain

Connect a drain line to the 1¼" female pipe thread fitting on the overflow drain port on the side of the water-saver reservoir. Connect the manual drain valve to the same drain line.

Figure 2–3. DRAIN CONNECTIONS

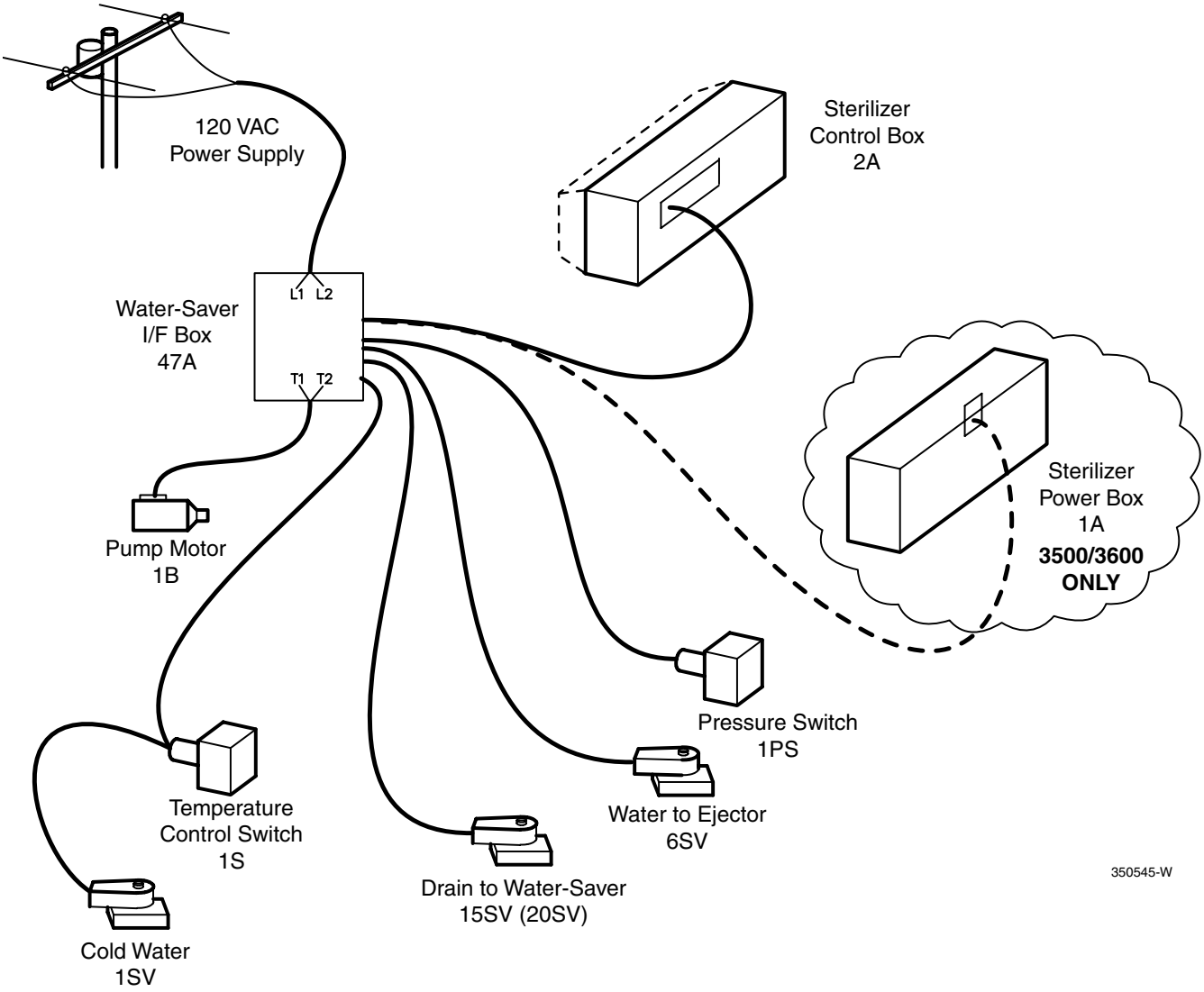


CONNECTING THE ELECTRICAL CABLES (MP-129 A & B)

Refer to Figure 2–4 and wiring diagram W1297, included in the water-saver package.

Figure 2–4. CABLE CONNECTIONS (MP-129 A & B)

M/C 3500 and 100 Series (MP-129A)
M/C 3600 and 200 Series (MP-129B)



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Pump Motor

1. Remove the cover plate from the junction box on the side of pump motor 1B.
2. Pull the wires out and connect these wires for the proper voltage *as shown on the connection diagram on the wiring diagram.*

230VAC CONVERSION PACKAGE

If the water-saver will be connected to 230 VAC power:

1. All Units: Replace the contactor and the overload relay inside Water-Saver I/F Box 47A with the components supplied in the conversion pacakge *(see bill of materials)*.
2. **100 and 200 Series only:** Replace solenoid valve 20SV with the 24 VAC solenoid valve in the conversion package.
3. Replace the cover plate.
4. Route the wires from pump motor 1B to Water-Saver I/F Box 47A and connect *as shown on the wiring diagram.*

Pressure Switch

1. Connect pressure switch 1PS to Water-Saver I/F Box 47A *as shown on the wiring diagram.*
2. Adjust the pressure switch:

   100 and 200 Series: *See "PRESSURE SWITCH ADJUSTMENT — 100 and 200 Series" on page 4-4.*

   M/C 3500 and 3600: *See "PRESSURE SWITCH ADJUSTMENT — M/C 3500 and 3600" on page 4-5.*

Solenoid Valves

1. Connect Water Saver ON valve 15SV (20SV) to jack 1J on Water-Saver I/F Box 47A.
2. Disconnect Water to Ejector valve 6SV from sterilizer Control Box 2A.
3. Connect Water to Ejector valve 6SV to jack 2J on Water-Saver I/F Box 47A.

Water-Saver I/F Box

1. Route a 120VAC, 60Hz, 30AMP (or 230VAC, 60Hz, 15AMP) power source to Water-Saver I/F Box 47A and connect the wires to relay 1K *as shown on the wiring diagram.*
2. Connect the water-saver to the sterilizer *as shown on the wiring diagram:*

   100 and 200 Series: Connect Water-Saver I/F Box 47A to sterilizer Control Box 2A.

M/C 3500 and 3600: Connect Water-Saver I/F Box 47A to sterilizer Control Box 2A and Power Box 1A.

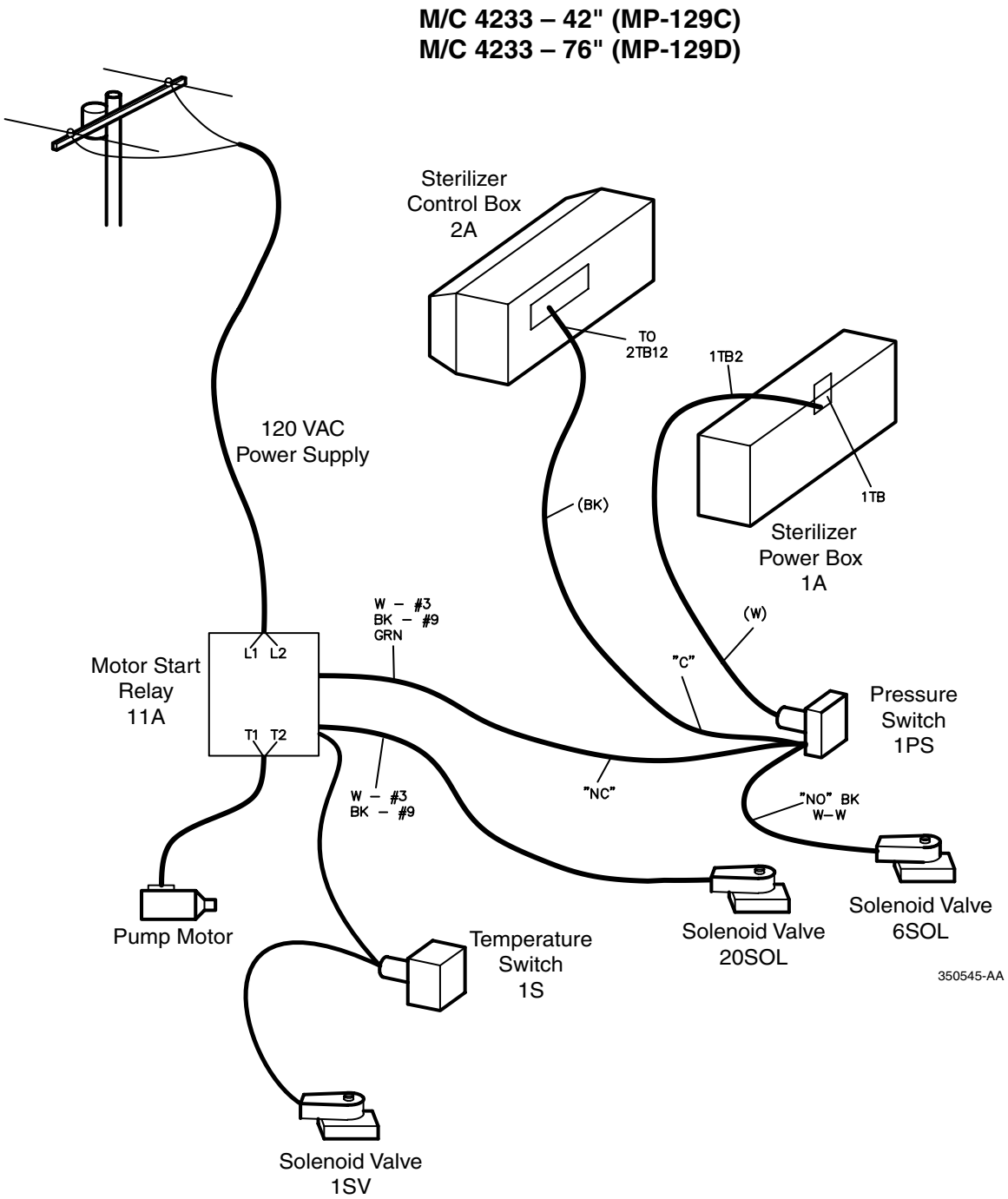
3. Check the pump motor for proper rotation when electrical power is supplied to Water-Saver I/F Box 47A.

See CHECKING THE ROTATION OF THE PUMP MOTOR on page 2-14.

CONNECTING THE ELECTRICAL CABLES (MP-129 C & D)

Refer to Figure 2–5 and wiring diagram 531181 (included in the water-saver package).

Figure 2–5. CABLE CONNECTIONS (MP-129 C & D)



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NOTE ▶

18-gauge industrial-grade wire is required for the low voltage wiring of the pressure switch and solenoid valve.

Pump Motor Connection

1. Remove the cover plate from the junction box on the side of the pump motor.
2. Pull the wires out and connect these wires in the appropriate combinations *as shown on the wiring diagram.*

NOTE ▶

If the pump is wired for High Voltage, you must also replace the overload heaters (see Figure 2–6 on page 2-13).

3. Replace the cover plate.
4. Route the brown, blue, and green/yellow wires from the pump motor to motor start relay 2K and connect *as shown on wiring diagram 531181.*

Pressure Switch

1. Connect the black wire from the “NC” terminal on tpressure switch 1PS to the No. 9 terminal on motor start relay 2K.
2. Connect the white wire from the common wire nut in the pressure switch box to the No. 3 terminal on the motor start relay.
3. Connect a black wire from the “C” terminal on pressure switch 1PS to the No. 12 terminal on terminal block 2TB in sterilizer Control Box 2A.
4. Connect a white wire from the No. 2 terminal on terminal block 1TB in sterilizer Power Box 1A to the common wire nut inside the pressure switch box.
5. Adjust the pressure switch to 2 psi above atmospheric.

See "PRESSURE SWITCH ADJUSTMENT — M/C 4200" on page 4-6.

Solenoid Valves

1. Connect a black wire between solenoid valve 20SOL to terminal No. 9 on motor start relay 2K.
2. Connect a white wire between solenoid valve 20SOL to terminal No. 3 on the motor start relay 2K.
3. Connect a black wire from solenoid valve 6SOL to the “NO” terminal on pressure switch 1PS.
4. Connect a white wire from solenoid valve 6SOL to the common wire nut inside the pressure switch box.

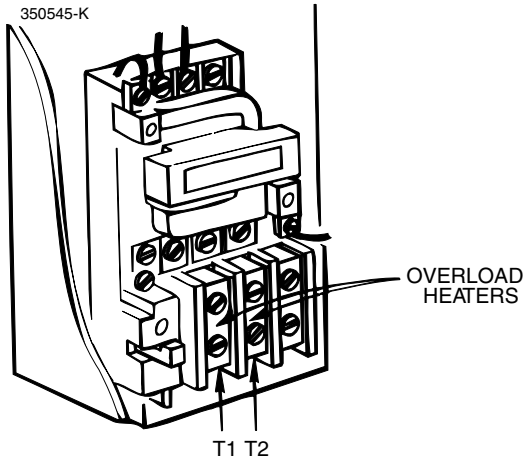
Motor Start Relay (11A)

1. Route a 120VAC, 60Hz, 30AMP power source to motor start relay 2K and connect to terminals L1, L2, and GRN.
2. The connections from the motor start relay to the water-saver motor should be factory assembled. If the wiring should be disconnected, refer to the wiring diagram when replacing wires.

NOTE ▶

Be sure the overload heaters are in place at terminals T1 and T2 in the motor start interface box (see Figure 2–6).

Figure 2–6. OVERLOAD HEATERS



3. Check the pump motor for proper rotation when electrical power is supplied to motor start relay 2K.

See "CHECKING THE ROTATION OF THE PUMP MOTOR" on page 2-14.

CHECKING THE ROTATION OF THE PUMP MOTOR

To check the pump motor for proper rotation:

1. Turn on the motor momentarily and visually observe the rotation of the motor shaft.
2. If the shaft is not rotating in the same direction as the indicator arrow embossed on the pump housing, interchange the No. 5 and No. 8 wires.
3. Recheck the rotation.

Section 3 MP-129F Installation

Follow the instructions in this user manual when installing the water-saver to any of the following sterilizers:

- 400/500 Series
- 700 Series
- 800 Series

NOTES▶

Bills of Materials (BOMs) and drawings necessary for assembling this kit are included with the parts.

- *Use the BOMs as a checklist to verify receipt of all parts.*
- *Use the BOMs and the drawings to assemble the parts per these instructions.*
- *Retain all BOMs and drawings with the unit for future reference.*

PACKAGE CONTENTS

MP-129F

Assembly 61301609267 (Rev. A)

MP129F-WS700/800 WATERSAVER

Item	Description	Part Number	Qty
1	CASTLE,WATER SAVER SYS	HS03472	1
2	WATERSAVER PKG,WS700/800	61301609272	1
3	PIPING PKG,WS700/800,WATERSVR	61301609273	1
4	ID,WS700/800 WATERSAVER	PI0022	1
5	DIAG,WIRING,11A,WATERSAVER,WS	W1320	1
7	MANUAL(U)-WATER SAVER	350545	1

220V Conversion Package

Assembly 61301609274 (Rev. A)

MP129F-WS700/800 WATERSVR,220V

Item	Description	Part Number	Qty
1	RELAY,OVERLOAD,12.0-18.0AMPS	61301602113	1

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MP-129F INSTALLATION SEQUENCE

Turn off all electricity, water, and steam to the sterilizer before starting the water-saver installation. Touching live electrical connections and/or exposure to live steam could cause serious injury.

Installation of the water-saver consists of:

1. Locating, mounting, and anchoring (page 3-4).
2. Modifying the sterilizer piping (page 3-5).
3. Connecting the cold water supply (page 3-5).
4. Connecting the overflow drain line (page 3-6).
5. Connecting the electrical cables (page 3-7).
6. Checking the rotation of the pump motor (page 3-9).

Refer to the engineering drawings listed in Table 3–1 during installation of the MP-129F Water-Saver.

Table 3–1. MP-129F Water Saver Drawings

Sterilizer Model	Piping Package	Piping Schematic	Wiring Diagram
400/500 Series 700 Series 800 Series	61301609273	PI0022	W1320

LOCATING, MOUNTING, AND ANCHORING

Location

Refer to installation drawing HS3472 (included in water-saver package).

The water-saver can be placed on the floor or mounted to the ceiling in any convenient location adjacent to the sterilizer. A 20-foot length of copper tubing, with connection fittings is supplied for connecting the water-saver to the sterilizer.

Locating the water-saver within the connected reach of the copper tubing limits the positioning to approximately 15 feet from the sterilizer. If the water-saver is to be located on the side of the sterilizer opposite the connection piping, the distance may be somewhat reduced.

When mounting to an overhead structure, positioning the vacuum port of the water ejector on the water-saver 10 feet above the floor is about the maximum height that permits the 20-foot copper tubing to reach the sterilizer.

Mounting and Anchoring

Mounting brackets are provided to secure the unit to a wall or to mount it to the ceiling. Mounting holes in the bottom plate are provided for securing the unit to the floor.

Structures for ceiling-mounted units must be able to support a minimum of 250 lbs. (113 Kg) (150 lbs. [68 Kg] plus water, hardware, and safety margin).

Use 3/8" diameter bolts with appropriate anchoring devices to secure the water-saver.

For seismic anchoring requirements, worst case center of gravity location, and weight, refer to drawing No. 531199 (located in Section 5).

The water-saver can stand stationary of its own weight if anchoring is not required or in areas where accidental tipping is not a possibility.

All mounting hardware other than the mounting brackets provided on the water-saver is the responsibility of the customer installer.

CONNECTING THE PIPING

Each sterilizer being fitted with the water-saver must be modified by installing solenoid valve 15SV, check valve 9CV, and the copper tubing to connect into the water-saver.

Solenoid Valve 15SV and Check Valve 9CV

Refer to the piping assembly drawing and piping schematic included with the water-saver when installing the piping modification package.

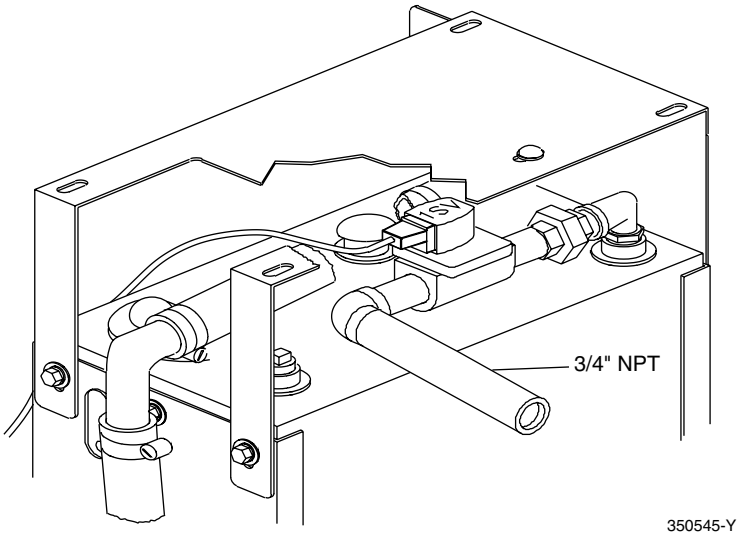
NOTE ▶

Apply pipe thread sealant compound or pipe sealant tape to all pipe fitting threads.

Cold Water Supply

Connect the 3/4” NPT water supply piping to the water supply elbow on the top of the reservoir (labeled CWI on installation drawing HS3472).

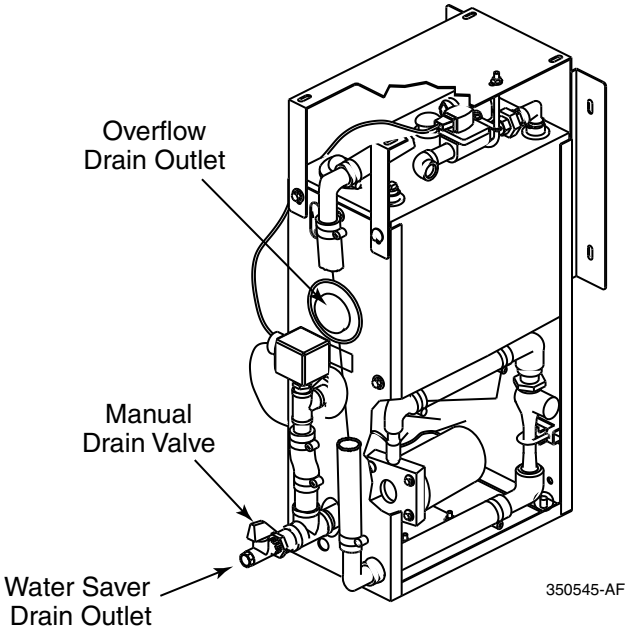
Figure 3–1. COLD WATER CONNECTION



Overflow Drain

Connect a drain line to the 1¼" female pipe thread fitting on the overflow drain port on the side of the water-saver reservoir. Connect the manual drain valve to the same drain line.

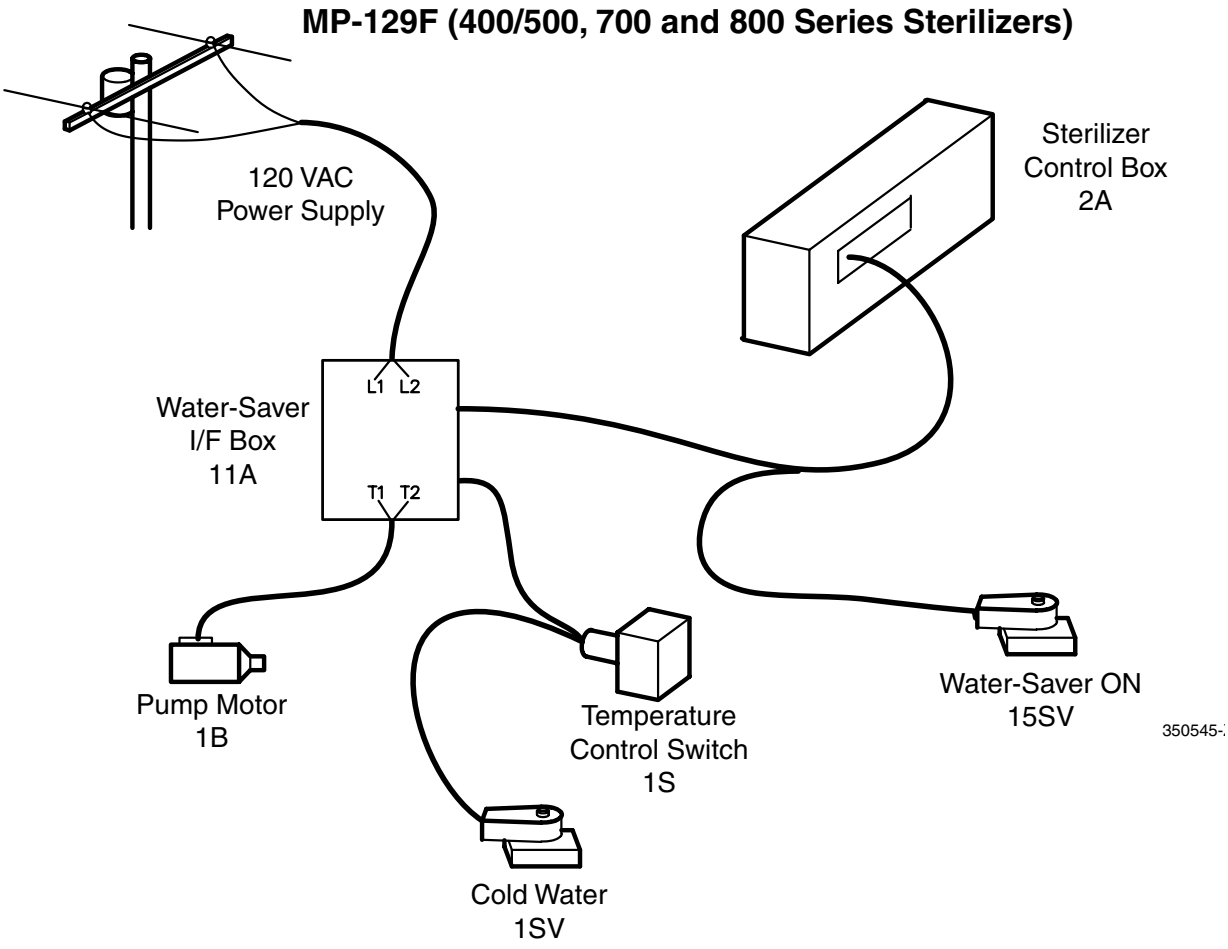
Figure 3–2. DRAIN CONNECTIONS



CONNECTING THE ELECTRICAL CABLES

Refer to Figure 3–3 and wiring diagram W1320, included in the water-saver package.

Figure 3–3. CABLE CONNECTIONS (MP-129F)



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Pump Motor

1. Remove the cover plate from the junction box on the side of pump motor 1B.
2. Verify the pump is wired for 120 VAC *as shown on the wiring diagram.*

230 VAC CONVERSION PACKAGE

If the water-saver will be connected to 230 VAC power:

1. Replace the overload relay.
2. Replace the cover plate.
3. Route the wires from pump motor 1B to Water-Saver I/F Box 11A and connect *as shown on the wiring diagram.*

Water-Saver I/F Box

1. Route a 120VAC, 60Hz, 30AMP (or 230VAC, 60Hz, 15AMP) power source to Water-Saver I/F Box 11A and connect to terminals 1, 3, and GRN on 1K.
2. Check the pump motor for proper rotation when electrical power is supplied to Water Saver I/F Box 11A.

See "CHECKING THE ROTATION OF THE PUMP MOTOR" on page 3-9.

Solenoid Valve

Connect Water-Saver ON valve 15SV to 15JO on Control Box 2A.

CHECKING THE ROTATION OF THE PUMP MOTOR

To check the pump motor for proper rotation:

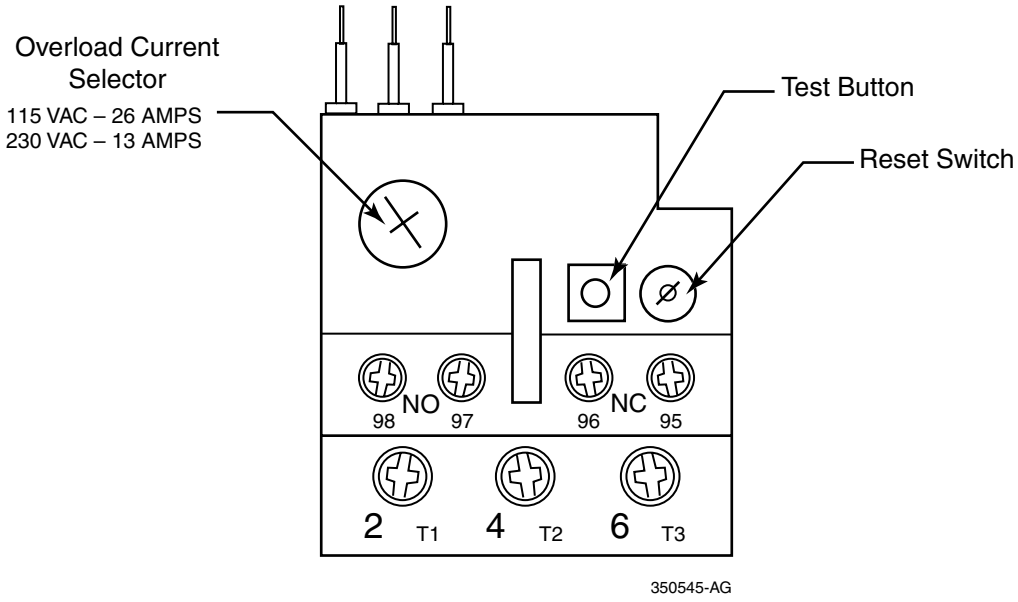
1. Turn on the motor momentarily and visually observe the rotation of the motor shaft.
2. If the shaft is not rotating in the same direction as the indicator arrow embossed on the pump housing, interchange the No. 5 and No. 8 wires.
3. Recheck the rotation.

CHECKING THE OVERLOAD RELAY

To check the overload relay:

1. Remove the cover from Water-Saver I/F Box 11A.
2. Verify the overload current selector as set as follows:
   - 115 VAC – set to 26 AMPS
   - 230 VAC – set to 13 AMPS
3. Manually turn ON the Water Saver ON (DO14) output on the sterilizer. Verify the water-saver turns ON.
4. Press the test button. Verify the pump motor stops running.
5. Reset the overload relay.
6. Manually turn OFF the Water Saver ON (DO14) output.
7. Reinstall the I/F box cover.

Figure 3–4. OVERLOAD RELAY



Section 4 Maintenance and Troubleshooting

PERIODIC MAINTENANCE SCHEDULE

WARNING

Maintenance should be performed by qualified personnel ONLY.

PERFORMANCE ASSURANCE PLAN

Preventive maintenance performed by factory-trained service representatives, using authorized parts and service techniques, is recommended. Recognizing symptoms of potential trouble and making corrections immediately is less costly and time consuming than repairing damaged equipment. Our Performance Assurance Plan offers scientific maintenance, not merely repair service.

For quality service on this equipment and information on our Performance Assurance Plan, contact Getinge USA, Inc. 1777 East Henrietta Road, Rochester, NY 14623-3133 or call 1-800-950-9912.

Provide preventive maintenance for the water-saver at the intervals specified.

Table 4–1. Periodic Maintenance Schedule

MAINTENANCE ITEM	RECOMMENDED INTERVAL	FOR DETAILS, SEE PAGE
Check the operation of water-saver components as part of the periodic maintenance of the sterilizer.	WHEN REQUIRED	Refer to the Periodic Maintenance Schedule in the Service Manual for your sterilizer.
Clean and sanitize the tank.	WHEN REQUIRED	4-2
Check the operation of the temperature switch	EVERY THREE MONTHS	4-3
Check the operation of the pressure switch. To adjust, use the proper procedure for your model sterilizer: • 100 and 200 Series • M/C 3500 and 3600 • M/C 4233	EVERY THREE MONTHS	See Note below. 4-4 4-5 4-6

NOTE ▶

If an MP-129A Water-Saver is installed on a 400 /500 Series sterilizer, follow the pressure switch adjustment procedure on drawing SK48835.

CLEANING AND SANITIZING THE TANK

To clean and sanitize the water-saver tank:

1. Disable the water-saver:
   a. Turn OFF the bypass switch S1.
   b. Disconnect the high-voltage power supply to the pump.

NOTE ▶

On MP-129F units, disable the water-saver by setting configuration switch DS14 to 0. Refer to the sterilizer service manual for procedure.

2. Remove the large plug in the top of the tank.
3. Add sanitizing agent to the tank water.

   Use an off-the-shelf, non-toxic, non-caustic water tank sanitizer and cleaner.
4. Agitate the water solution. Use a long-handled brush if necessary for proper cleaning.
5. Drain the tank.
6. Enable the water-saver:
   a. Connect the high-voltage power supply to the pump.
   b. Turn ON the bypass switch S1.

NOTE ▶

On MP-129F units, enable the water-saver by setting configuration switch DS14 to 1.

7. Verify that the tank refills.
8. Replace the large plug.

TEMPERATURE SWITCH ADJUSTMENT

TOOLS REQUIRED

- Digital Thermometer

CHECK

1. Turn on the hot and cold water lines. Using the digital thermometer set for °F, place the thermocouple probe in the stream of the incoming water.

   The temperature should read 120°F or greater.

2. Adjust the thermocouple to be approximately halfway down into the tank.
3. When the tank is approximately three-fourths (3/4) full, the solenoid valve (cold water supply) should also be admitting water into the tank. Observe the water flow in the tank from the valve.
4. Turn off the hot water supply to the tank.

   As the water is cooled, the solenoid valve should be de-energized (check with screwdriver).

5. Using the digital thermometer set for °F, take the temperature of the water in the tank and record it on the line in the left margin.

   The water temperature should be less than 115°F.

ADJUST

6. If the water in the tank is not less than 115°F, remove the cover of the temperature switch.
7. Using a 1/4” open end wrench, turn the stem counterclockwise to lower the temperature setting.
8. Turn on the hot water and retest until the water solenoid is energized whenever the water temperature rises above 115°F. Verify the solenoid valve turns off the cold water supply when the tank temperature is lowered to approximately 96°F.
9. Use the ball valve at the circulating pump inlet to drain the tank then refill the tank as described above.
10. After the correct temperature is attained, replace the temperature switch cover.

PRESSURE SWITCH ADJUSTMENT

100 and 200 Series

TOOLS REQUIRED

- 0 to 50 psia pressure meter accurate to ±0.05 psia. (Must be an absolute pressure meter.) See Appendix B in the sterilizer Service Manual.
- 120VAC volt meter or test lamp.

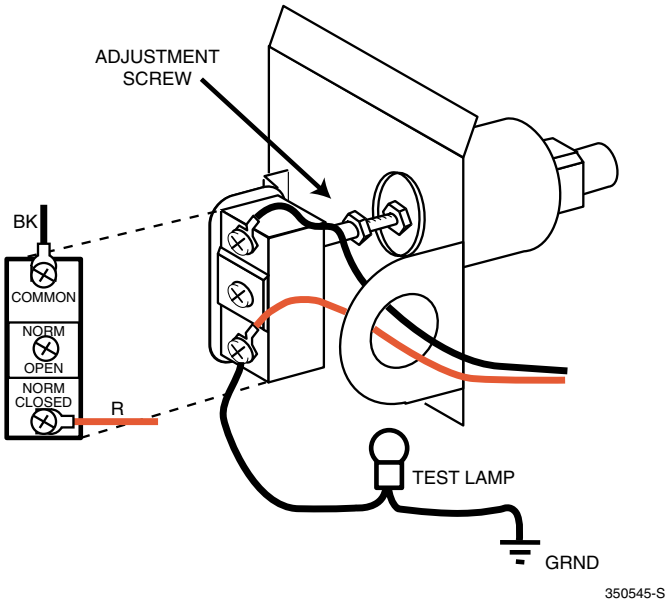
WARNING

SHOCK HAZARD: AC line voltage is present on the pressure switch terminals. Turn OFF power to the sterilizer when connecting the test lamp and adjusting the pressure switch.

PROCEDURE

1. Remove the cover from the pressure switch.
2. Connect a 120VAC test lamp between the normally closed contact of the pressure switch and ground.

Figure 4–1. PRESSURE SWITCH ADJUSTMENT (MP-129 A&B)



3. Close and seal the chamber.
4. Using manual mode, pressurize the chamber by turning ON digital output DO00 (steam to chamber). See the sterilizer service manual.
5. When the test lamp turns OFF, turn OFF output DO00. Chamber pressure should read 2 psi above atmospheric.
6. Adjust the pressure switch and recheck the trip point.

M/C 3500 and 3600

TOOLS REQUIRED

- 0 to 50 psia pressure meter accurate to ±0.05 psia. (Must be an absolute pressure meter.) Refer to Appendix B in the Sterilizer Service Manual.
- 120VAC volt meter or test lamp.

SHOCK HAZARD: AC line voltage is present on the pressure switch terminals. Turn OFF power to the sterilizer when connecting the test lamp and adjusting the pressure switch.

PROCEDURE

1. Connect the pressure meter to the pressure meter connection on the sterilizer control box.

   Air should be used to pressurize the chamber when making the pressure switch adjustment.

2. Raise the sterilizer control bezel and open the control box. Switch the controls switch on the control PC board from AUTO to MANual. Using the necessary dip switch, pressurize the sterilizer chamber to 2 psi above atmospheric.

3. Connect the voltmeter or the test lamp between the common (C) and the normally closed (NC) terminals on the water-saver pressure switch (see Figure 4–1on page 4-4).

4. Using the adjustment screw on the pressure switch, adjust the pressure switch so the voltmeter reads no continuity (or the test lamp goes OFF) when the pressure gauge reads 2 psi above atmospheric.

M/C 4200

The pressure switch is factory set and should not need adjustment. However, if the switch should be out of adjustment the switch can be reset as follows:

TOOLS REQUIRED

- 0 to 50 psia pressure meter accurate to ±0.05 psia. (Must be an absolute pressure meter.) Refer to Appendix B in the Sterilizer Service Manual.
- 120VAC volt meter or test lamp.

SHOCK HAZARD: AC line voltage is present on the pressure switch terminals. Turn OFF power to the sterilizer when connecting the test lamp and adjusting the pressure switch.

PROCEDURE

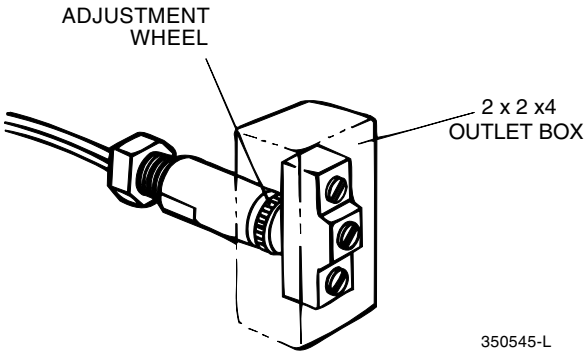
1. Connect the pressure meter to the pressure meter connection on the sterilizer control box.

   Air should be used to pressurize the chamber when making the pressure switch adjustment.

2. Raise the sterilizer control bezel and open the control box. Switch the controls switch on the control p.c. board from AUTO to MANual. Using the necessary dip switch, pressurize the sterilizer chamber to 2 psi above atmospheric.

3. Connect the voltmeter or the test lamp between the common (C) and the normally closed (NC) terminals on the water-saver pressure switch.

Figure 4–2. PRESSURE SWITCH ADJUSTMENT (MP-129 C&D)



4. Using the adjustment wheel on the pressure switch (see Figure 4–2), adjust the wheel so the voltmeter reads no continuity (or the test lamp goes OFF) when the pressure gauge reads 2 psi above atmospheric.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	REMEDY
Little or no vacuum (motor running).	1. Chamber Drain Screen clogged. 2. Solenoid Valve 15SV (20SV) not opening. 3. Solenoid Valve 2SV not opening properly. 4. Solenoid Valve 4SV not opening properly. 5. Clogged Ejector or Vacuum Line. 6. Water Supply off or restricted. 7. Temperature Switch. 8. Check Valve 9CV. 9. Pump defective. 10. Piping leaks.	1. Clean Drain Screen. 2. Clean or repair. 3. Clean or repair. 4. Clean or repair. 5. Clean or replace. 6. Restore Water Supply. 7. Readjust or replace. 8. Clean or replace. 9. Repair or replace. 10. Repair or replace.
Motor does not run.	1. Electrical Supply off. 2. Motor defective. 3. Pump seizes.	1. Restore Electrical Supply. 2. Repair or replace. 3. Repair or replace.
Water overflows continuously from reservoir.	Temperature Switch activated.	Repair or readjust.
Overflow water too hot (steam).	Temperature Switch set too high.	Adjust Temperature Switch.
(Refer to Sterilizer Service Manual — “Trouble Analysis.”)		

RECOMMENDED SPARE PARTS

MP-129 (A&B)

To ensure that parts are immediately available when needed, keep in stock the parts listed below.

Table 4–2. MP-129 (A&B) Replacement Parts

Description	Part Number	Qty							
		100		3500		200		3600	
		115V	230V	115V	230V	115V	230V	115V	230V
COIL,SOL REPL,VLV#517345	517303	1		1	1				
COIL,SOL,24V,238-812-005,10.1W	61301600157		1						
KIT,SOL,541581	61301600443	1	1	1	1				
COIL,SOL REPL,VLV#517350	517304					1		1	1
COIL,SOL,24V,206-089-004,15.4W	61301600429						1		
REPAIR PKG,ASCO SOL VAL,HV200-	61301604084					1		1	1
PKG,REBUILD FOR 61301601702	61301601744						1		
SWITCH,PRESS,2-4 PSI,W/COVER	530931	1	1	1	1	1	1	1	1
RELAY,24VAC,DPDT,20A/240VAC	61301601073	1				1			
RELAY,OVERLOAD,23-32AMPS	61301603224	1		1		1		1	
RELAY,OVERLOAD,12.0-18.0AMPS	61301602113		1		1		1		1

MP-129 (C&D)

To ensure that parts are immediately available when needed, keep in stock the parts listed below.

Table 4–3. MP-129 (C&D) Replacement Parts

Description	Part Number	Qty
REPLACEMENT COIL, SOLENOID VALVE 517345	517303	1
SERVICE KPACKAGE, SOLENOID VALVE 517345	54190	1
REPLACEMENT COIL, SOLENOID VALVE 517346	517304	1
SERVICE PACKAGE, SOLENOID VALVE 517346	61301604084	1
HEATER, OVERLOAD	37963	1
RELAY, MOTOR START	37956	1
SWITCH, PRESSURE	89444	1

MP-129F

To ensure that parts are immediately available when needed, keep in stock the parts listed below.

Table 4–4. MP-129F Replacement Parts

Description	Part Number	Qty 115V	Qty 230V
COIL,SOL,24V,238-812-005,10.1W	61301600157	1	1
KIT,SOL,541581	61301600443	1	1
RELAY,OVERLOAD,23-32AMPS	61301603224	1	
RELAY,OVERLOAD,12.0-18.0AMPS	61301602113		1

Ordering

For ordering information concerning parts listed in this manual, call the company's Customer Service line at (800) 950–9912.

Click Here To Open Parts List & Wiring Rev F

Section 5 Reference Drawings

INTRODUCTION

This section includes the rough-in drawing for the MP-129 Series Water-Saver. Contact Getinge USA technical service to confirm the latest revision.

Piping assembly drawings, piping schematics, and electrical schematics are included in the water-saver parts package.

- **MP-129:** *See Table 2–1 on page 2-4.*
- **MP-129F:** *See Table 3–1 on page 3-3.*

For water-saver anchoring information, contact Getinge USA technical services at (800) 950-9912.

Figure 5–1. WATER SAVER SYSTEM (sheet 1 of 2)

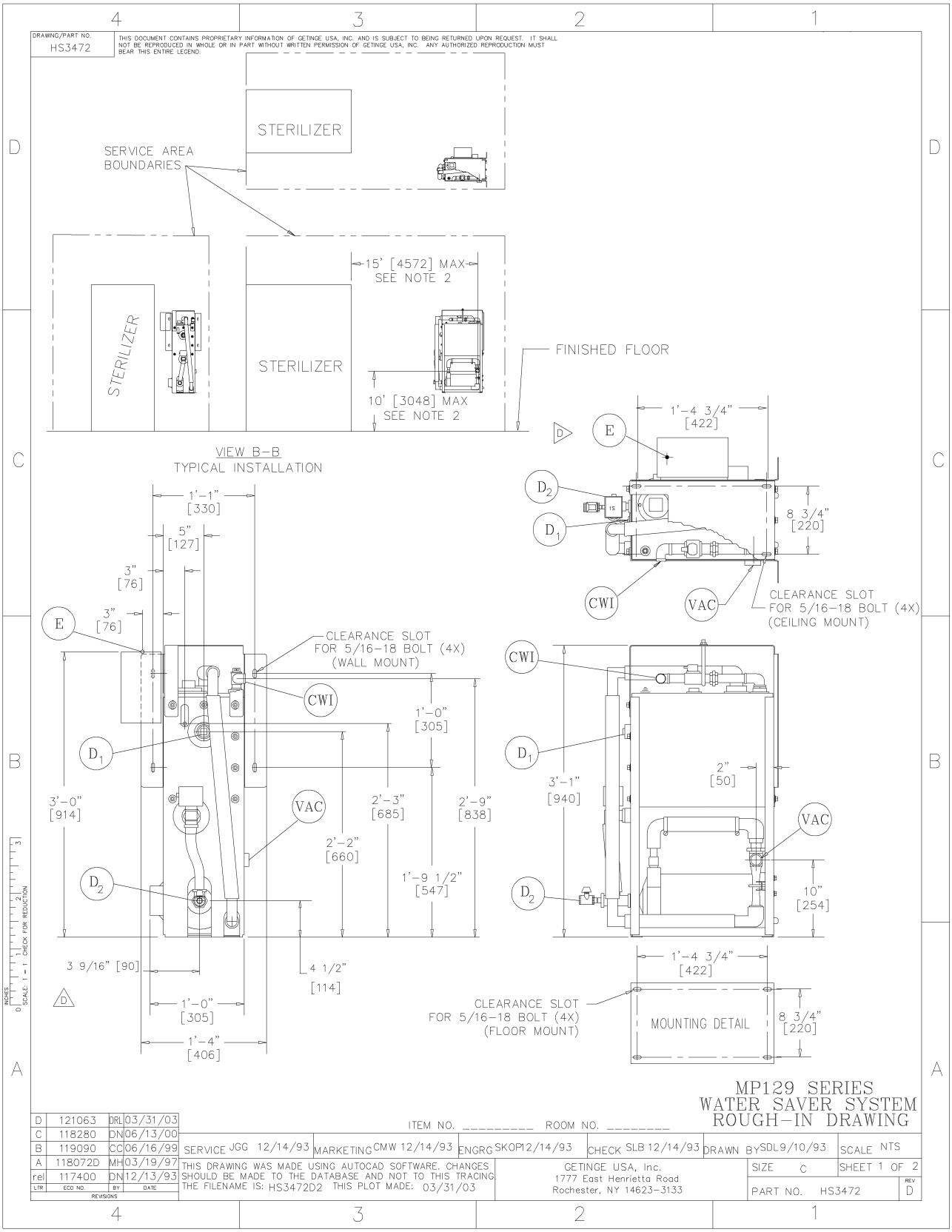


Figure 5–1. WATER SAVER SYSTEM (sheet 2 of 2)

DRAWING/PART NO. HS3472

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NOTICE: WORK BY OTHERS

SAFE AND EFFICIENT OPERATION OF THIS PRODUCT IS DEPENDENT UPON THE OWNER/USER PROVIDING THE SERVICES SPECIFIED HEREIN AS WELL AS ANY OTHER NORMALLY ACCEPTED ELECTRICAL, MECHANICAL OR PLUMBING INTERFACE BETWEEN USER'S SUPPLY AND THIS PRODUCT. GETINGE USA WILL NOT ASSUME RESPONSIBILITY FOR PROBLEMS THAT RESULT FROM NON–COMPLIANCE WITH THE ABOVE CONDITIONS. THE FOLLOWING CONDITIONS AND SERVICES ARE REQUIRED BY GETINGE USA EQUIPMENT AND AND ARE TO BE PROVIDED BY OTHERS.

TABLE A: PLUMBING CONNECTIONS & UTILITIES

ON UNIT CONNECTION	PIPE SIZE TO UNIT	PRESSURE RANGE DYNAMIC
(CWI) = SUPPLY – COLD WATER TO RESERVOIR (TEMP CONTROL) 3/4" NPT [19]	3/4" NPT [19]	30–70 PSI 80°F (26.7°C) MAX
(VAC) = VACUUM TO STERILIZER (EJECTOR)	1 1/4" [32] FLEX HOSE (200,3600,4200) 3/4"OD [19] COPPER TUBE (100,3500)	N/A
(D_1) = DRAIN, OVERFLOW OUTLET TO DRAIN OR COLLECTION SYSTEM. 1–1/4" NPT [32]	N/A	N/A
(D_2) = DRAIN, TANK 1/4" NPT [6]	N/A	N/A

TABLE B: ELECTRICAL CONNECTIONS & UTILITIES

SERVICE	UTILITY	MAX CURRENT (AMPS)	BREAKER/FUSING RECOMMENDED
(E) = MOTOR STARTER RELAY BOX (1/2" CONDUIT CONNECTION)	115V, 60HZ, 1~	26A	30A
	230V, 60HZ, 1~	13A	15A

NOTES
ARCHITECTS AND CONTRACTORS

1) FOR SEISMIC ANCHORING REQUIREMENTS, WORST CASE CG LOCATION & WORST CASE WEIGHT REFER TO DRAWING *531199* .

2) TYPICAL INSTALLATION SHOWN IN VIEW "B". WATER SAVER VACUUM PORT SHOULD BE WITHIN 15 FEET [4572] OF STERILIZER, AND NO MORE THAN 10 FEET [3048] ABOVE THE COMMON FLOOR. GETINGE/CASTLE SUPPLIED INTERCONNECTING HOSE IS 20 FEET [6096] IN LENGTH, AND CAN BE SHORTENED BY CUSTOMER IF DESIRED. CONSULT WITH GETINGE/CASTLE PRODUCT SUPPORT IF THIS LOCATION REQUIREMENT CAN NOT BE MET.

3) IT SHALL BE THE CUSTOMER'S RESPONSIBILITY TO PROVIDE A PROPER DRAINAGE SYSTEM IN ACCORDANCE WITH APPLICABLE LOCAL CODES. TEMPERATURE OF DRAIN WATER WILL NOT EXCEED 140°F UNDER NORMAL OPERATING CONDITIONS.

4) ROUTE SERVICES TO PREVENT DAMAGE TO SERVICES AND INJURY TO PERSONNEL.

5) ALLOW 18 INCHES [457] MINIMUM CLEARANCE ON ALL SIDES FOR SERVICE ACCESS. CHECK LOCAL CODES FOR GREATER APPLICABLE CLEARANCE REQUIREMENTS.

6) COLD WATER:
   A) COLD WATER QUALITY: USE PORTABLE WATER WITH A HARDNESS OF 0.5–10 GRAINS/GAL [8–170 PPM].
   B) BACK–SYPHONAGE PROTECTION IS REQUIRED BY OTHERS. CHECK LOCAL PLUMBING CODE AND INSTALL REQUIRED BACKFLOW PREVENTER. (EXAMPLES: VACUUM BREAKER, DUAL–CHECK OR REDUCED PRESSURE TYPE).

7) ELECTRICAL SUPPLY:
   A) IT SHALL BE THE CUSTOMER'S RESPONSIBILITY TO COMPLETE ALL ELECTRICAL CONNECTIONS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES.
   B) A DEDICATED, PERMANENTLY CONNECTED ELECTRICAL SUPPLY WITH CONVENIENTLY ACCESSIBLE DISCONNECT SWITCH (SUPPLIED BY CUSTOMER) IS REQUIRED.
   C) FOR MODELS MP–129A THRU E, THE CONTACTOR INTERFACE BOX SHALL BE LOCATED WITHIN 15 FEET [4572] OF STERILIZER.

TABLE D: UNIT WEIGHTS

MAX WEIGHT		CRATED DIMENSIONS		
CRATED	UNCRATED	LENGTH	WIDTH	HEIGHT
295 LBS	190 LBS	41"	41"	30"
[134 KG]	[86 KG]	[1041]	[1041]	[762]

TABLE C: OPERATING ENVIRONMENTAL CONDITIONS

TEMPERATURE	PRESSURE	RELATIVE HUMIDITY
10°C (50°F) to 40°C (104°F)	Atmospheric from 0–6500 ft. (2000m) (Special software needed for elevations over 6500ft. (2000m)	10 to 90% non–condensing

VOLTAGE FLUCTUATIONS (Main supply)	OVERVOLTAGE CATAGORY	POLLUTION DEGREE
not to exceed ±10% of the nominal voltage	III	2

INCHES 0 1 2 3 SCALE: 1 = 1 CHECK FOR REDUCTION

MP129 SERIES
WATER SAVER SYSTEM
ROUGH–IN DRAWING

SERVICE JGG 12/14/93 | MARKETING CMW 12/14/93 | ENGRG FS 12/14/93 | CHECK SLB 12/14/93 | DRAWN BY SLD 09/10/93 | SCALE NTS

SEE SHEET 1 OF 2

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THE FILENAME IS: HS3472–D2 THIS PLOT MADE: 03/28/03

GETINGE USA, Inc.
1777 East Henrietta Road
Rochester, NY 14623–3133

SIZE C | SHEET 2 OF 2
PART NO. HS3472 | REV D

LTR	ECO NO.	BY	DATE
REVISIONS			

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